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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,473	12/27/2001	Sunghoe Yoon	8733.573.00	7768

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EXAMINER	
DI GRAZIO, JEANNE A	

ART UNIT	PAPER NUMBER
2871	

DATE MAILED: 02/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,473	YOON, SUNGHOE	
	Examiner	Art Unit	
	Jeanne A. Di Grazio	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

Priority to Korean Patent Application No. 2001-25693 (May 11, 2001) is claimed.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-14 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling.

Per Applicant's enabling disclosure [0031-0033], the overcoat layer has to have a refractive index that is different from that of the cholesteric liquid crystal color filter in order to diffuse light, critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Specifically, if the overcoat layer is incorporated into the invention as merely to level the uneven surface of the color filter, then the diffusive cholesteric color filter as claimed by Applicant will not be able to diffuse light and will not work. Per Applicant's enabling disclosure, the overcoat layer is not just an overcoat layer, instead, this overcoat layer has a diffusive function. As such, these elements, critical to Applicant's invention, must be recited in the independent claims 1,6, 9, and 10.

Applicant's attention is furthermore directed to method claim 10, which recites that the overcoat layer is formed over the cholesteric liquid crystal layer to form a substantially even surface. If the surface is thus essentially even, then, the filter will lack diffusive properties.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 and 8-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Figure 1, conventional liquid crystal display device) in view of Fujiwara et al. (US 5,305,129) and further in view of Jones et al. (5,936,284).

Per claims 1-5 and 8-9: Applicant's Admitted Prior Art (APA), Figure 1, teaches and discloses the following conventional elements of a reflective liquid crystal display. Specifically, APA has a first substrate (1) having a plurality of switching elements, a first electrode (3, plurality of reflective electrodes), a second substrate (2), a second electrode (5) beneath the second substrate (2) (common electrode, 5), a retardation layer (7) on the second substrate (2), and a polarizer (8) on the retardation layer (7), and a liquid crystal layer (6) between the first electrode (3) and the second electrode (5). A color filter (4) is furthermore formed beneath a second substrate (2).

APA does not appear to explicitly specify a cholesteric liquid crystal color filter on an absorption layer.

Fujiwara teaches a liquid crystal display device of optical writing type having a carbon dispersed light absorbing layer and a cholesteric reflector (Title, entire patent). Referring to Figure 1 of Fujiwara, the reflective cholesteric color filter / reflector (25) is formed on a light absorbing layer (24). Fujiwara has these elements for a liquid crystal display element of optical writing type of simple cell structure that can be manufactured easily (Summary of the Invention) and that utilizes light efficiently (Background of the Invention).

Fujiwara is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to incorporate a cholesteric reflector into a liquid crystal display for the purpose of light efficiency in a simple cell structure that can be easily manufactured.

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify APA in view of Fujiwara for a reflective liquid crystal display of high light efficiency with a simple cell structure that can be easily manufactured.

APA does not appear to explicitly specify a cholesteric liquid crystal color filter having a plurality of protrusions.

Jones, on the other hand, teaches and discloses a diffusive color filter (Figure 8) that contributes to the reduction of image parallax or pixel crosstalk, minimizes depolarizing effects, and that can be mass produced (Column, 2, Lines 32-41). It may be presumed that the Jones reference has an overcoat layer because overcoat layers are commonly used on the surface of a color filter for leveling the uneven surface, alignment, insulation, and as a base upon which to

form electrodes. It may furthermore be presumed that shape, size, and distribution of the beads dispersed in the color filter are maximized for maximum diffusion and light distribution.

Jones is evidence that ordinary workers in the field of liquid crystals would have had the reason, suggestion, and motivation to incorporate a diffusive color filter into the prior art for the purpose of reducing image parallax or pixel crosstalk, minimizing depolarizing effects, and that can be mass produced (Column, 2, Lines 32-41).

Therefore, it would have been obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made to modify APA and Fijuwara in view of Jones for a highly light efficient cholesteric color filter that has a diffusive property to thus reduce image parallax or pixel crosstalk, minimize depolarizing effects, and that can be mass produced (Column, 2, Lines 32-41).

Claims 6-7 and 10-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (Figure 1, conventional liquid crystal display device) in view of Fujiwara et al. (US 5,305,129) and further in view of Jones et al. (5,936,284).

Per claims 6-7 and 10-14: Applicant's recited method steps would have been rendered obvious to one of ordinary skill in the art of liquid crystals at the time the invention was made in view of the device as taught and disclosed by the above cited prior art and as previously applied to the device claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeanne A. Di Grazio whose telephone number is (571)272-2289. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeanne Andrea Di Grazio

Patent Examiner
Art Unit 2871

Robert Kim, SPE